Simulation of a Factory Floor Using Value Stream Mapping

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ABSTRACT

Value stream mapping (VSM) and simulation are two powerful tools used in implementing lean manufacturing techniques. Lean manufacturing is defined as a systematic approach to identifying and eliminating wastes through continuous improvement by flowing the product at the pull of the customer in pursuit of perfection. In a lean manufacturing environment, VSM is used as a method of visually mapping a product's production path (including materials and information) from door to door. VSM documents a product's flow from the raw material all the way to the finished part and charts each process in the material and information flow. This charting and documentation of current processes serves as a starting point to help engineers, managers, suppliers, and customers recognize waste and identify its causes. The results of the value stream map help generate a desired future state which serves as a foundation for other lean implementation strategies.

This paper discusses:

- Value stream mapping for developing a current state in the manufacturing process
- Identifying non-value added activities in the current and other areas of improvement
- The future state of the value stream
- The use of simulation in the continuous improvement process
- Constructing simulation models from the VSM current and future states
- Case studies of VSM on the factory floor
- Lessons learned from VSM and simulation